INFORMATION BROCHURE

For Admission to M.Sc Economics Programme in the Academic Year 2025-26.

Department of Humanities & Social Sciences, National Institute of Technology Kurukshetra- 136119

The M.Sc Economics course consists of the following components.

S.No	COMPONENT	Credits
1	Theory (core)	51
2	Lab (core)	10
3	Electives	16
4	Dissertation work	06
	TOTAL	**83**

Scheme of M. Sc Economics

Semester I:

Sr. No.	Course Code	Course Title	Credits	L	T	P
		Teaching Scheme		**Contact Hours/Week**		
1	HSEC501	Microeconomics I	4	4	0	0
2	HSEC503	Macroeconomics I	4	4	0	0
3	HSEC505	Mathematical Methods for Economics I	4	3	0	2
4	HSEC507	Statistical Methods for Economic Analysis	4	3	0	2
5	HSEC509	Introduction to Programming and Statistical Software	3	1	0	4
6	HSNC10#	NCIC Courses (German Language Skills, French Language Skills, Human Values and Social Responsibility, Indian Knowledge System)	2	2	0	0
		Total	**21**			

Semester II:

Sr. No.	Course Code	Course Title	Credits	L	T	P
1	HSEC502	Microeconomics II	4	4	0	0
2	HSEC504	Macroeconomics II	4	4	0	0
3	HSEC506	Mathematical Methods for Economics II	4	3	0	2
4	HSEC508	Introductory Econometrics	4	3	0	2
5	HSEC510	Econometrics Using Programming and Statistical Software	3	1	0	4
6	HSNC10#	NCIC Courses (German Language Skills, French Language Skills, Human Values and Social Responsibility, Indian Knowledge System)	2	2	0	0
		Total	**21**			

Semester III:

Sr. No.	Course Code	Course Title	Credits	L	T	P
1	HSEC511	Indian Economy	4	4	0	0
2	HSEC513	Development Economics	4	4	0	0
3	HSEC515	Research Methods and Report Writing	3	1	0	4
4	HSEC5##	**Program Elective I**	4	-	-	-
5	HSEC5##	**Program Elective II**	4	-	-	-
		Total	**19**			

Semester IV:

Sr. No.	Course Code	Course Title	Credits	L	T	P
1	HSEC512	Public Economics	4	4	0	0
2	HSEC514	International Economics	4	4	0	0
3	HSEC516	Dissertation/Project Report	6	6	0	0
4	HSEC5##	**Program Elective III**	4	-	-	-
5	HSEC5##	**Program Elective IV**	4	-	-	-
		Total	**22**			

- **Total Credit of the Programme = 21+21+19+22=83**

- **Qualifying credits of the Programme= 80**

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: Micro Economics I

Course Category: Core	**Internal: 50 Marks**
Course Code: HSEC 501	**Theory: 50 Marks**
Credits: 4 (L-4, T-0, P-0)	**Total: 100 Marks**
Semester: 1st	**Time: 3 Hours**

Course Objectives

This course serves as an introduction to the essential field of economics, specifically focusing on Micro Economics. The primary objective is to offer a fundamental understanding of the behaviours exhibited by individual economic entities, encompassing aspects such as consumer behaviour, demand dynamics, producer actions, supply considerations and the intricate decisions regarding pricing &output by firms operating within diverse market structures.

UNIT-I Theory of Consumer Behaviour

Basic elements of Supply and Demand: The law of demand/supply, forces behind the demand/supply curve, shifts in demand/supply curve, Elasticity of demand-price, income and cross elasticity. Utility: Cardinal and Ordinal Utility Theory, Application of Indifference Curve Approach, Revealed Preference Theory, Price, Income and Substitution effects (Hicks and Slutsky Analysis), Consumer Surplus, Demand Forecasting.

UNIT-II Theory of Production

Production Function and its related concepts; Total, Average and Marginal Products, Types of production function, Law of return to scale, Diminishing law of variable proportion, Production Possibility Curve, Isoquants-assumptions and properties, Marginal rate of technical substitution, Producer equilibrium.

Cost function: Different concepts of costs, short run cost analysis and long run cost Analysis, Envelope cost and L shaped cost curve, Economies and Diseconomies of scale.

UNIT-III Theory of Firm

Perfect Competition: Meaning and features, Price and Output determination under Perfect Competition: Short run and long run equilibrium of firm and industry. Monopoly-Meaning and features, price and output determination under monopoly, short run and long run equilibrium of firm and industry. Monopolistic Competition, Price discrimination.

UNIT-IV General Equilibrium

Cobweb Model, Walras general equilibrium model: existence, uniqueness and stability of general equilibrium. Market Failure: Sources of market failure, Externalities, Public good, Asymmetric information, Moral hazard and principal agent problem, free riding problem.

Course Outcome

Upon completing this course, students will

- Gain a comprehensive understanding of consumer behaviour, they will also grasp the dynamics of firms' behaviour within different market structures, comprehending the nuances of their strategies and actions.
- Develop an appreciation for the complex interplay between consumers and firms, and how it shapes market outcomes and welfare.

Suggested Reading-

1. Koutsoyiannis, A. (1987) Modern Microeconomics. English Language Book Society, Macmillan.
2. Pindyck, Robert S., Rubinfeld, Daniel L. (2013). *Microeconomics 8th ed.* (8th). New Jersey: Pearson.
3. Salvatore, Dominick, "Principles of Micro-Economics", Oxford University Press.
4. Krugman, Paul R., Wells, Robin. (2013). *Microeconomics* (Ed. 3rd). New York: Worth Publishers.
5. Varian Hal R. (2019). MICROECONOMIC ANALYSIS, 3rd Edition

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: Macro Economics I

Course Category: Core	**Internal: 50 Marks**
Course Code: HSEC 503	**Theory: 50 Marks**
Credits: 4 (L-4, T-0, P-0)	**Total: 100 Marks**
Semester: 1st	**Time: 3 Hours**

Course Objectives

The main purpose of this course is to equip students with the tools and ideas necessary to understand the aggregate economy and to make informed opinions about different macroeconomic theories on national income and employment determination, determination of household consumption expenditure on final consumer goods and services, determination of investment expenditure on acquisition of capital goods by business firms.

UNIT-I National Income and Accounts

Introduction to Macroeconomics, National Income Accounting: Social Accounting, Input-output Accounting, Flow of Funds Accounting; Balance of payments accounting.

Consumption Function: Keynes's Psychological law of consumption-implications of the law; Empirical evidence on consumption function; reconciliation of short run and long run consumption function-absolute income, relative income, permanent income, life cycle and random walk hypothesis.

UNIT-II Aggregate Demand and Aggregate Supply

Aggregate demand, aggregate supply and the price level: the aggregate demand curve; short and long run aggregate curves; Derivation of Aggregate Demand Curve, Shift in Aggregate Demand Curve and Multiplier Effect. Aggregate Supply: Short Run and Long Run Aggregate supply curve, Derivation of Aggregate Supply Curve, Shift in Aggregate Supply Curve. AD-AS Model: Friedman's Natural Rate Hypothesis.

UNIT-III Demand for Money

Classical and Keynesian Approach (The Regressive Expectations model); Post Keynesian approaches to demand for Money-Tobin (Portfolio balance approach), Baumol (Inventory theoretic approaches) and Friedman (Restatement of quantity theory of money).Patinkin's real balance effect.

UNIT-IV Supply of Money

Measures of money supply; RBI's approach to money supply; Mechanism of Monetary expansion and contraction (deterministic and behavioural models); Determinants of money supply; Instruments of Monetary control. Basic IS-LM model, extension of IS-LM model with government sector, labour market and variable price level.

Course Outcomes

Upon completing this course, students will

- Gain understanding of National income analysis, consumption functions, aggregate demand and supply and monetary dynamics.
- Understand Economic policy, financial analysis and research, equipped with practical skills and theoretical understanding to navigate complex economic landscapes.

Suggested Readings

1. Dornbusch, R., Bodman, P., Crosby, M., Fischer, S., & Startz, R. (2006). *Macroeconomics* (2nd ed.). McGraw-Hill Education.
2. Mankiw, N. G. (2018). *Macroeconomics* (10th ed.). Worth.
3. Blanchard, O., & Johnson, D. H. (2012). *Macroeconomics* (6th ed.). Pearson.
4. D'Souza, E. (2009). *Macroeconomics*. Prentice Hall.
5. ROMER. (2018). *Advanced Macroeconomics* (5th ed.). McGraw-Hill Education.

Course Title: Mathematical Methods for Economics I

Course Category: Core	**Internal: 50 Marks**
Course Code: HSEC 505	**Theory: 50 Marks**
Credits: 4 (L-3, T-0, P-2)	**Total: 100 Marks**
Semester: 1st	**Time: 3 Hours**

Course Objectives

The course aims to:

(i) Equip students with understanding of the most important mathematical techniques used in modern economics;

(ii) Illustrate the use of these techniques by applying them to various well-known economic models and

(iii) Complement the postgraduate microeconomic and macroeconomic theory courses.

UNIT-I Functions

Functions; Single Variable Functions: Domain and Range. Linear Functions, Quadratic Functions, Polynomials, Logarithmic Functions, Exponentials, Multivariable Functions, Sequences and Convergence

UNIT-II Calculus: Single Variable

Limit and Continuity, Derivative: Mean-Value Theorem. Implicit Differentiation. Taylor's Theorem and Approximation: Increasing and Decreasing, Convex and Concave Functions. Integration: Definite and Indefinite Integrals. Few Methods of Solving Integration Problems. Application of Integration in Economics

UNIT-III Calculus: Multi Variable

Partial derivatives. Level Curves: Convex and Concave Functions. Homogenous Functions. Euler Theorem;

UNIT-IV Linear Algebra

Matrices: Singular and nonsingular matrices, Determinants; Inversion of a Matrix, Idempotent Matrix. Linear Equations: Homogeneous and non-homogeneous. Solution of Linear Equations Using Matrices. Linear dependence and independence. Rank: Eigen Values and Eigen Vectors. Leontiff Model

Course Outcomes

Upon completing this course, students will

- Be able to analyze and interpret key functions used in economic modeling, including linear, quadratic, and multivariable functions.
- Be able to apply foundational calculus techniques, such as differentiation and integration, to solve economic problems and explore concepts like convexity, concavity, and optimization.

Suggested Readings

1. Sydsæter, K., & Hammond, P. J. (2008). *Essential mathematics for economic analysis*. Pearson Education.
2. Simon, C. P., &Blume, L. (1994). *Mathematics for economists* (Vol. 7). New York: Norton.
3. Hoy, M., Livernois, J., McKenna, C., Rees, R., &Stengos, T. (2022). *Mathematics for economics*.MIT press.

Programme: M. Sc Economics
Course Title: Statistical Methods for Economic Analysis

Course Category: Core	**Internal: 50 Marks**
Course Code: HSEC 507	**Theory: 50 Marks**
Credits: 4 (L-3, T-0, P-2)	**Total: 100 Marks**

Semester: 1st

Course Objective

The primary objective of this course is to provide Introduction to Probability and Statistics for quantitative analysis in economics.

UNIT-I Probability and Distribution Theory

Sample spaces, counting methods, conditional probability.Bayes' Theorem. Random variables: discrete, continuous and mixed random variables. Multivariate distributions: distributions of functions of random variables, expectations, conditional expectations, jointly distributed random variables: density and distribution functions for jointly distributed random variables. Covariance and correlation coefficients: distribution of micro and macro-economic variables.

UNIT-II Estimation and Inference

Sample survey: Methods of sampling, role of sampling theory, properties of random samples. Estimation of population point parameters using methods of moments and maximum likelihood procedures. Properties of estimators: confidence intervals for population parameters

UNIT-III Hypothesis Tests and Model Selection

Defining statistical hypotheses, Testing of Hypotheses: Hypothesis testing in Economics with Examples. Distributions of test statistics: testing hypotheses related to population parameters. Type-I and Type-II errors, t-test, F-test, ANOVA. Power of a test: inferences based on two samples, analysis of paired data, inferences concerning a difference between population proportions, inferences concerning two population variances

UNIT-IV Linear Regression Model

Notion of causality, simple linear regression model, modelling of economic data and relationship using simple linear regression model. Estimation by method of ordinary least squares, properties of estimators, goodness of fit. Tests of Hypotheses.

Course Outcomes

Upon completing this course, students will

- Be able to understand and apply major quantitative techniques that social scientists use to test models, study economic behaviour.
- Be able to evaluate policies and relationships between variables.

Suggested Readings

1. DeGroot, Morris H. and Schervish, Mark. J. (2012): Probability and Statistics, 4th edition, Addison-Wesley
2. Hogg, Robert V.; Makean, J and Craig, Allen T. (2014): Introduction to Mathematical Statistics, Prentice Hall, 7th edition
3. Hwang, Jessica and Blitzstein, Joseph (2014): Introduction to Probability, CRC Press
4. Stock, James H. and Watson, Mark W. (2011): Introduction to Econometrics, Pearson Education Inc
5. Wooldridge, Jeffrey (2012):Introductory Econometrics: A Modern Approach, South Western

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: Introduction to Programming and Statistical Software

Course Category: Core   **Internal: 50 Marks**
Course Code: HSEC 509   **Theory: 50 Marks**
Credits: 3 (L-1, T-0, P-4)   **Total: 100 Marks**
Semester: 1st

Course Objectives

The course aims to equip students with essential programming skills and proficiency in statistical software commonly used in economic analysis. It focuses on teaching students how to apply statistical methods for data analysis, manipulate large datasets and run econometric models using tools like R, Stata.

UNIT-I R Basics

Installing R and R Studio, The R user Interface, R packages. Expressions, Objects, Symbols, Functions. Syntax: Constants, Operators, Expressions, Control Structures. Accessing Data Structures: Vectors and Matrices, R Objects: Primitive object types, vectors, lists, other object types. Logical Statements, Loops and Repeats, Entering Data Within R, Entering Data Using R Commands, Using the Edit GUI, Saving and Loading R Objects, Importing Data from External Files, Exporting and Importing Data from Databases.

UNIT-II Probability and Statistics with R

Analyzing Data: Summary Statistics, Correlation and Covariance, Probability Distributions: Normal Distribution. Statistical Tests for Continuous and Discrete Data, Power Tests: Experimental Design Example, t-Test Design, Proportion Test Design, ANOVA Test Design using R; Simulation using R.

UNIT-III Data Visualisation in R

Line Charts, Bar Charts, Histogram, Scatter Plots, Multiple Plots, Geographical Plots in R

UNIT-IV Introduction to Stata

Stata Interface, Do Files, Writing Commands in Stata, DAT files, Data Importing (CSV and Microsoft Excel). Input Data in Stata: Descriptive Statistics, Hypothesis Testing using Stata. Simulation using Stata.

Course Outcomes

Upon completing this course, students will
- Be able to independently conduct empirical research, interpret outputs.
- Effectively present their findings for real-world economic problems.

Suggested Readings

1. Cotton, R., Learning R: a step by step function guide to data analysis. 1st edition. O'reilly Media Inc.
2. Gardener, M. (2017). Beginning R: The statistical programming language, WILEY.
3. Lawrence, M., &Verzani, J. (2016). Programming Graphical User Interfaces in R. CRC press.
4. Adler, J. (2012), R in a Nutshell: A Desktop Quick Reference, O'reilly Publications, Second Edition
5. Wickham, H. &Grolemund, G. (2016), R for Data Science: Import, Tidy, Transform, Visualize, and Model Data, O. Reilly Media.
6. Mehmetoglu, M., &Jakobsen, T. G. (2022). *Applied statistics using Stata: a guide for the social sciences*. Sage. Micro econometrics Using Stata
7. Baum, C. F. (2006). *An introduction to modern econometrics using Stata*. Stata press.

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: Micro Economics II

Course Category: Core	**Internal: 50 Marks**
Course Code: HSEC 502	**Theory: 50 Marks**
Credits: 4 (L-4, T-0, P-0)	**Total: 100 Marks**

Semester: 2nd

Course Objective

This course aims to provide students with an in-depth understanding of advanced topics in microeconomics, focusing on key concepts such as oligopoly, game theory, and welfare economics.

UNIT-I Oligopoly and other Market Structures

Oligopoly: Non collusive oligopoly (Cournot, Bertrand, Edgeworth, Chamberlin, Kinked demand curve and Steckelberg's solution) Collusive oligopoly (Cartels and mergers, Price leadership). Price and output determination under-Monopsony and Bilateral monopoly.

UNIT-II Alternative Theories of the Firm and Strategic Interaction

Alternative theories of firms: Baumol's sales revenue maximisation model, Marris model of managerial enterprise, Bain's limit pricing theory, Williamson's model of managerial discretion. Game theory: Nash equilibrium, Prisoner's dilemma, zero sum game, mixed strategies, Dominant strategies, Repeated games.

UNIT-III Theory of Distribution

Theory of Distribution: Neo classical approach, Marginal product theory, Product exhaustion theorem, Elasticity of technical substitution, technical progress and factor shares, Theory of distribution in imperfect product and factor markets.

UNIT-IV Welfare Economics

Welfare Economics: Bentham, Pareto's criteria, Kaldor, Hicks, Scitovsky and Rawls criteria, Social Welfare Function, Arrow's Impossibility Theorem, Theory of second best.

Course Outcomes

Upon completing this course, students will

- Be equipped with the analytical tools and theoretical frameworks necessary to critically analyze complex economic scenarios, make informed decisions.
- Contribute to discussions on market behaviour, strategic interactions and social welfare.

Suggested Readings

1. Nicholson, W. (2002). Microeconomic theory: Basic principles and extensions (8th ed.). South Western Thomson Learning.
2. Koutsoyiannis, A. (1987) Modern Microeconomics. English Language Book Society, Macmillan.
3. Pindyck, Robert S., Rubinfeld, Daniel L. (2013). *Microeconomics 8th ed.* (8th). New Jersey: Pearson.
4. Salvatore, Dominick, "Principles of Micro-Economics", Oxford University Press.
5. Krugman, Paul R., Wells, Robin. (2013). *Microeconomics* (Ed. 3rd). New York: Worth Publishers.
6. Henderson, J. M., & Quandt, R. E. (1988). Microeconomic theory: A mathematical approach. McGraw-Hill.
7. Varian Hal R. (2010). Intermediate microeconomics: a modern approach. 8th Edition

Course Title: Macro Economics II

Course Category: Core	**Internal: 50 Marks**
Course Code: HSEC 504	**Theory: 50 Marks**
Credits: 4 (L-4, T-0, P-0)	**Total: 100 Marks**

Semester: 2nd

Course Objectives

This course Introduces students to the main classes of models in modern macroeconomics. The first half of the course will be aimed at providing students with astound knowledge of modern macroeconomic theories along with measures to analyze unemployment and inflation including contrasting economic views on unemployment. While the second half will deal with the theories of business cycles and focus on integration of goods &money market and the use of fiscal & monetary policies to achieve economic goals.

UNIT-I Open Macro Economics

International flow of capital and goods, saving and investment in a small open economy, Exchange Rates-real and nominal, Demand and supply of Foreign Exchange, Balance of payments-current and capital account. Mundell-Fleming Model under fixed and flexible exchange rates.

UNIT-II Theory of Inflation

Classical, Keynesian and Monetarist approaches. Structuralist theory of inflation, Philips Curve Analysis-Short run and long run Philips curve. Natural Rate of Unemployment Hypothesis. Tobin's modified Philips curve.

UNIT-III Theory of Business Cycles

Business Cycle, Theories of Schumpeter, Kaldor, Samuelson and Hicks. Control of business cycles, relative efficacy of monetary and fiscal policies.

UNIT-IV Macroeconomic Policy

Monetary and Fiscal Policy-Targets and instruments. Conflicting objectives and coordination of objectives. Elasticities and effectiveness of monetary and fiscal policy. The Concept of Rational Expectations, New Classical Macro Economics: basic approach and policy implications. New Keynesian Economics-Sticky Nominal prices (Mankiw Model).

Course Outcomes

Upon completing this course, students will

- Demonstrate a comprehensive understanding of Open Macro Economics, Theory of Inflation, Theory of Business Cycles, Macro Economic Policy and recent developments.
- Be able to analyze macroeconomic phenomena, formulate policy recommendations and critically evaluate contemporary economic issues within the global context.

Suggested Readings

1. Dornbusch, R., Bodman, P., Crosby, M., Fischer, S., & Startz, R. (2006). *Macroeconomics* (2nd ed.). McGraw-Hill Education.
2. Mankiw, N. G. (2018). *Macroeconomics* (10th ed.). Worth.
3. Blanchard, O., & Johnson, D. H. (2012). *Macroeconomics* (6th ed.). Pearson.
4. D'Souza, E. (2009). *Macroeconomics*. Prentice Hall.
5. Romer. (2018). *Advanced Macroeconomics* (5th ed.). McGraw-Hill Education.

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: Mathematical Methods for Economics II

Course Category: Core   **Internal: 50 Marks**
Course Code: HSEC 506   **Theory: 50 Marks**
Credits: 4 (L-3, T-0, P-2)   **Total: 100 Marks**
Semester: 2nd
Course Objectives
1. To equip students with advanced optimization techniques, including constrained optimization methods, to analyze complex economic problems.
2. To develop students' ability to solve differential equations and apply these concepts to model economic dynamics and stability.
3. To introduce linear programming and other mathematical tools essential for constructing and interpreting economic models, such as market equilibrium and input-output analysis.

UNIT-I Optimization
Unconstrained Optimisation, Constrained Optimisation, Single variable and Multivariable Optimization. Lagrange multiplier method, Maxima and Minima of several variables, Applications in Economics. Introduction to Dynamic Optimisation

UNIT-II Differential Equations
Introduction to Differential Equations: First and second order differential equations, Integral Curve. Methods of Solving Differential Equations. Direction diagram and slope field, Qualitative theory and stability.

UNIT-III Linear Programming
Duality, Dual Problem, Dual Theorem, Complementary Slackness, Economic Application and Interpretation

UNIT-IV Economic Models
Utility and Partial Equilibrium Market Model. Application of Matrix in Market Model and National Income Model. Input-Output Analysis. Applications of Differential Equations in Economics.

Course Outcomes:
Upon completing this course, students will
- Be able to apply optimization techniques, including the Lagrange multiplier method, to analyze economic scenarios involving single and multivariable functions.
- Solve and interpret first- and second-order differential equations and use these to model stability and dynamics in economics.

Suggested Readings
1. Knut Sydsaeter (Author), Peter Hammond (Author), Arne Strom (Author), Andrés Carvajal. Essential Mathematics for Economic Analysis, 4th Edition, 2016. Pearson.
2. Acemoglu, Daron. Introduction to Modern Economic Growth. Princeton, NJ: Princeton University Press, 2008.
3. Chiang, Alpha C. Elements of Dynamic Optimization. Long Grove, IL: Waveland Press, 1999.
4. Luenberger, David. Optimization by Vector Space Methods. New York, NY: Wiley-Interscience, 1997.
5. Kamien, Morton I., and Nancy L. Schwartz. Dynamic Optimization: The Calculus of Variations and Optimal Control in Economics and Management. 2nd ed.

Programme: M. Sc Economics
Course Title: Introductory Econometrics

Course Category: Core	**Internal: 50 Marks**
Course Code: HSEC 508	**Theory: 50 Marks**
Credits: 4 (L-3, T-0, P-2)	**Total: 100 Marks**

Semester: 2nd

Course Objectives

The course aims to provide students with a strong foundation in the theoretical and practical aspects of econometric modelling. It covers the classical linear regression model (CLRM), focusing on the estimation of parameters, hypothesis testing and handling violations such as multicollinearity and heteroscedasticity. Additionally, students will explore time series and panel data models, equipping them with the necessary tools to analyse economic data and draw meaningful conclusions from real-world applications

UNIT-I Assumptions of Classic Linear Regression Model

Two variable case estimation of model by method of ordinary least squares, properties of estimators, goodness of fit, tests of hypotheses and confidence intervals

UNIT-II Multiple Linear Regression Model (MLRM)

Estimation of parameters, MLRM in Matrix notation and estimation, properties of ordinary least square (OLS) estimators, goodness of fit-R^2 and adjusted R^2. Partial regression coefficients, testing hypotheses–individual and joint, functional forms of regression models. Modelling discrete dependent (logistic) and independent (dummy) variables using regression.

UNIT-III Violations of Classical Assumptions

Main violations of regression models including Multicollinearity, Heteroscedasticity, Auto-correlation. Testing the assumptions and remedy the violations.

UNIT-IV Time Series and Panel Data

An introduction to time series models: ARMA/ARIMA models, Unit Root, Cointegration and Granger Causality. Panel Data Models, Pooled OLS, Fixed Effect, Random Effects Models. Real-world Examples using Economic data.

Course Outcomes

- Upon completing this course, students will be able to understand the econometric models and techniques utilized in previous and current economic research.
- This course would serve as a foundation for students to understand the new developments in econometric modeling and apply methods in econometrics to the research problems.

Text Books

1. Christopher Dougherty. Introduction to Econometrics.
2. Wooldridge Jeffrey. Introductory econometrics: A modern approach. Cengage learning.
3. Enders W. Applied econometric time series. John Wiley & Sons.

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: Econometrics Using Programming and Statistical Software

Course Category: Core   **Internal: 50 Marks**
Course Code: HSEC 510   **Theory: 50 Marks**
Credits: 3 (L-1, T-0, P-4)   **Total: 100 Marks**
Semester: 2nd

Course Objectives

The course aims to develop students' proficiency in applying econometric techniques using statistical software like R and Stata. It covers essential topics such as linear and logistic regression, including model estimation, diagnostics and interpretation, as well as advanced topics like multinomial and ordered logistic regression.

UNIT-I Regression using R/Stata

Introduction to Regression Models: Simple Linear Regression, Multiple Linear Regression using Stata/R. Estimating regression models, Model interpretation: Coefficients, R-squared, p-values, F-test, T-test using Stata; Diagnostics for Linear Models. Residual analysis, Multicollinearity (VIF).

UNIT-II Logistic Regression using R/Stata

Introduction and estimation of logistic regression models: Odds ratios, Marginal Effects. Treatment of Binary dependent/independent variables in Regression and Data. Model Diagnostics: ROC curve, AUC using Stata. Advanced Topics: Multinomial and Ordered Logistic Regression using Stata/R.

UNIT-III Testing for Assumptions of CLRM using R/Stata

CLRM assumptions overview. Testing for Linearity: Residual Plots, Partial Residuals. Testing for Multicollinearity (VIF), Heteroskedasticity (Breusch Pagan Test, White Test) using R; Autocorrelation (Durbin Watson Test), Normality of Residuals (Histogram, Shapiro-Walk Test) using R

UNIT-IV Time Series and Panel Data Econometrics using R/Stata

Overview of time series structure: stationarity testing (DF, ADF test) using R. ARMA/ARIMA models, Mean Absolute Error, RMSE, Vector Auto regression (VAR) using R programming. Pooled OLS, Fixed Effect, Random Effects Models using Stata; Hausman Test.

Course Outcomes

Upon completing this course, Students will be able to

- Run regression and test various assumptions of regression using programming software.
- Work with different kinds of Economic data such as cross sectional, time series and panel data.

Suggested Readings

1. Stock, J.H, & Watson, M.W. Introduction to Econometrics
2. Applied Statistics using Stata: A Guide for the Social Sciences by Mehmetoglu& Jacobsen
3. R for Data science by Grolemund& Wickham
4. Wooldridge Jeffrey. Introductory econometrics: A modern approach.
5. Micro econometrics using Stata

Course Title: Human Values & Social Responsibility

Course Category: NCIC	**Internal: 50 Marks**
Course Code: HSNC 101	**Total: 50 Marks**
Credits: 2 (L-2, T-0)	**Semester: Odd/Even**

Course Objectives

- To help students understand the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness & prosperity, which are core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity.
- To enable the students to understand harmony and its relevance at all the levels and to create awareness about social responsibility among students & make them socially responsible citizens.

Unit-I: Human Values

Definition Features and Importance. Classification of Values: Intrinsic and Extrinsic Values, Universal and Situational Values, Personal and Social Values, Physical, Environmental, and Economic Values, Aesthetic, Moral and Religious Values. The Problem of Hierarchy of Values and their Choice.

Unit-II: Ethics and Holistic Life

Human Life, its Aim and Significance: The Concept of a successful life, happy life and a meaningful life. Harmony in Personal and Social Life: Concept of Personal, Group and Business Ethics. Creating a Value Based Work Culture in hostel, classroom and other places in the Campus and Society.

Unit-III: Professional Ethics

Professional Ethics: Concept and Principles. Personal & Professional Ethics, Emotional Intelligence, Code of conduct. Workplace Ethics. Ethical Decision Making in Business, Ethical Dilemmas. Creating Ethical Organizations. Globalization and Business Ethics.

Course Outcomes

At the end of the Course, students will be able to

- Understand the concept of contemporary ethics at different levels: Individual, Local and Global and enable them to cross examine the ethical and social consequences of the decisions of their life-view and world view.
- Identify personal, professional and social values and integrate them in their personality after cross examination.

Suggested Readings

1. Lillie William, An Introduction of Ethics, Allied Publisher, Indian Reprint 1955.
2. William, K Frankena, Ethics, Prentice Hall of India, 1988.
3. RR Gaur, R Sangal, G P Bagaria, Human Values and Professional Ethics, Excel Books, New Delhi, 2010
4. A.N. Tripathi, Human Values, New Age Intl. Publishers, New Delhi, 2004.
5. Fernado A.C. Business Ethics. An Indian Perspective, Pearson Education, New Delhi.
6. Cambell Jones, Martin Parker & Rene Ten Bos, For Business Ethics, Routledge, New York, 2005.
7. Philip Kotler& Nancy Lee, Corporate Social Responsibility, Wiley- India Edition, New Delhi.
8. Fernando AC (2018). Business Ethics and Corporate Governance (2nd Ed). Pearson Education India.

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: Indian Knowledge System

Course Category: NCIC　　　　　　　　　　　　**Internal: 50 Marks**
Course Code: HSNC 106　　　　　　　　　　　　**Total: 50 Marks**
Credits: 2 (L-2, T-0)　　　　　　　　　　　　**Semester: Odd/Even**

Course Objectives

To facilitate the students with the concepts of Indian traditional knowledge and to make them understand the importance of roots of knowledge system and to make the students understand the traditional knowledge and analyse it and apply it to their day to day life.

UNIT-I

Introduction to traditional knowledge: Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, Indigenous Knowledge (IK), characteristics, the vedic corpus, Philosophical system, wisdom through ages.

UNIT-II

Cognitive biomarkers of creativity with IKS perspectives. Positivity: Traditional approaches. Happiness: objective and subjective measures of wellbeing, life satisfaction, positive affect, negative affect and happiness. Resilience: Developmental and clinical perspectives. Self-regulation and self-control, optimism, self-esteem.Spirituality and well-being. Self and Identity in modern Psychology and Indian thought.

UNIT-III

Health and Psychology; Emotional intelligence, yoga way of life, Indian approach to Psychology. Consciousness; levels, body-mind relationship. Indigenous perspective of Psychology: self and motivation.

Course Outcomes

At the end of the course, students will be able to

- Identify the concept of traditional knowledge and its importance with the need and importance of protecting traditional knowledge.
- Understand, connect &explain basics of Indian traditional knowledge to modern scientific perspective.

Suggested Readings

1. Mahadevan, M., Bhat, V.R. &Pavana N. (2022). Introduction to Indian Knowledge System: Concepts and Applications. PHI Learning
2. Baumgardner, SR & Crothers, MK (2009). *Positive Psychology.* Prentice Hall/Pearson Education.
3. Cornelissen, R.M., Misra G. &Varma S. (2014). Foundations & Applications of Indian Psychology. Pearson Education.

Course Title: French Language Skills

Course Category: NCIC	**Internal: 50 Marks**
Course Code: HSNC 108	**Total: 50 Marks**
Credits: 2 (L-2, T-0)	**Semester: Odd/Even**

Course Objectives

1. To introduce basic language skills in French Language.
2. To build confidence among students in speaking French Language with correct pronunciation.

UNIT-I: Basic Elements of Grammar

a) Determinants
b) Preposition
c) Adjective: demonstrative, interrogative and possessive.
d) Pronoun: Personal, possessive, demonstrative, interrogative
e) Present Tense, Past tense, Future tense and Imperfect tense
i) Adverb, j) Imperative and k) Comparative and superlative

UNIT-II: Translation

English to French, French to English

UNIT-III: Introduction to Culture and Civilization

Short questions on day-to-day life in France i.e. names of cities, rivers, mountains, periodicals, authors, important abbreviations, etc.

Course Outcomes

At the end of the course, students will be able to

- Learn and communicate effectively in French Language on day to day basis and will also be able to manage basic communication in French.

Suggested Readings

1. Connexions –I Didier
2. Connexions –II Didier
3. Connexions-3 by Régine Mérieux et Yves Loiseau

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES
Programme: M. Sc Economics
Course Title: German Language Skills

Course Category: NCIC   **Internal: 50 Marks**
Course Code: HSNC 109   **Total: 50 Marks**
Credits: 2 (L-2, T-0)   **Semester: Odd/Even**

Course Objectives

1. To introduce basic language skills in German Language.
2. To build confidence among students in speaking German Language with correct pronunciation.

UNIT-I: Basic Elements of Grammar

a) Wo, woher, wohin
b) Wer, was, wie.
c) Wie viel, wie viele, wie lange, Uhrzeiten..
d) Akkusativ, einen, keinen, doch usw.
e) Modalverben., f) Wenn, weil, wann, warum., g) Dativ
h) Praepositionen mit Akkusativ und Dativ wie aus, bei, durch, fuer usw.
i) Perfekt mit haben und sein.

UNIT-II: Translation

English to German, German to English

UNIT-III: Introduction to Culture and Civilization

Short questions on day-to-day life in Germany i.e. names of cities, rivers, mountains, periodicals, authors, important abbreviations, etc.

Course Outcomes

At the end of the course, students will be able to

- Learn and communicate effectively in German Language on day to day basis and will also be able to manage basic communication in German.

Suggested Readings

1. Deutsch alsFremdsprache, IA (BNS 1A)
2. Deutsch als Fremdsprache 1B (BNS 1B)
3. Sprachkurs 3